RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-030
RFW#: 9812L631
SDG/SAF#: H0323/B99-030

W.O.#: 10985-001-001-9999-00
Date Received: 12-10-98

PCB

The set of samples consisted of two (2) soil samples collected on 12-04-98.

The samples and their associated QC samples were extracted on 12-18-98 and analyzed based on SW846, 3rd Edition on 12-25,27-98. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8081.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature has been recorded on the chain-of-custody.

2. All required holding times for extraction and analysis have been met.

3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.

4. The method blank was below the reporting limits for all target compounds.

5. All obtainable surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. Matrix spikes were not performed due the dilution required for analysis. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

8. All samples required instrument dilutions due to high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

9. All initial calibrations associated with this data set were within acceptance criteria.

10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

01-14-19
Date

pef\r:\group\data\pcb\12L-631.pcb

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #: 98CC413

12/23/98

Initiator: B Astor
Date: 12/23/98
Client: TWU - Hanford

RFW Batch: 9812L630 & 9812L631
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: OPCB
Matrix: Soil
Prep Batch: 98LE1869 98LE1859

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

Matrix QC is specified on chain but no MS/MSD was extracted

- Both samples in batch 9812L631 required a 50x dilution for target compounds
- A MS/MSD on either of these samples would not give any more information because the

2. Known or Probable Causes(s) Spike would be diluted out.

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: _____

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

extract MS/MSD for 9812L630

5. Final Action...signature/date: C. Eaff Other Explanation:

X Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Batch # 98LE0004

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: C. Stefanosky	__	__ Inorganic: Perrone
__	X Project Mgr: CN. JS	__	__ GC/LC: Rycklak/Schnell
__	X Section Mgr: Siery/Wesson/Daniels	__	__ MS: LeMin/Taylor/Kasdras
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

005 R-1 Login 1/4/99 MC

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 12/28/98 08:12

RFW Batch Number: **9812L631** Client: **TNU-HANFORD B99-030** Work Order: 10985001001 Page: 1

006

	Cust ID:	B0TB06	B0TB07	PBLKXQ	PBLKXQ BS
Sample Information	RFW#:	001	002	98LE1859-MB1	98LE1859-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	50.0	50.0	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	D	%	D	%	88	%	90	%				
	Decachlorobiphenyl	D	%	D	%	98	%	91	%				
			fl		fl		fl		fl		fl		fl
Aroclor-1016		2100	U	2200	U	33	U	33	U				
Aroclor-1221		4300	U	4300	U	67	U	67	U				
Aroclor-1232		2100	U	2200	U	33	U	33	U				
Aroclor-1242		2100	U	2200	U	33	U	33	U				
Aroclor-1248		2100	U	2200	U	33	U	33	U				
Aroclor-1254		9100		7700		33	U	97	%				
Aroclor-1260		2100	U	2200	U	33	U	33	U				

12/21/98

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-030

DATE RECEIVED: 12/10/98 RFW LOT # :9812L631

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TB06	001	S	98LE1859	12/04/98	12/18/98	12/27/98
B0TB07	002	S	98LE1859	12/04/98	12/18/98	12/27/98
LAB QC:						
PBLKXQ	MB1	S	98LE1859	N/A	12/18/98	12/27/98
PBLKXQ	MB1 BS	S	98LE1859	N/A	12/18/98	12/25/98

RECRA LabNet Use Only
98126631

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU-Hanford B99-030
Est. Final Proj. Sampling Date
Project # 10986-Q01-001-9999-00
Project Contact/Phone #
RECRA Project Manager DT
QC Spec Del Std TAT 30 day
Date Rec'd 12/10/98 Date Due 1/9/99
Account #

Refrigerator #				6			6			6					
#/Type Container	Liquid														
	Solid			1g			1g			1g					
Volume	Liquid														
	Solid			60			60			60					
Preservatives															
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: Metal	CN						

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
Wi - Wipe
X - Other
F - Fish

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected			OPCB			TCLP		RCRA TCLP		IPH					
001	BØTBØ6			S	12/9/98	1325			✓			✓				✓					
2	7			S	↓	1320			✓			✓				✓					
3	6 tclpofoo1			L	*	–								✓							
4	7 ↓ 002			L	↓	–								✓							

Special Instructions:
saf # B99-030

COMPOSITE WASTE

DATE/REVISIONS:
1. * see laucirron
2. Run matrix QC
3.
4.
5.
6.

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Dedlee	Jaler	12/10/98	1000				

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES
* 4235795200634

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 4.2 C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-030-01	Page 1 of 1

Collector Doug Bowers	Company Contact Doug Bryant	Telephone No. 373-7251	Project Coordinator TRENT, SJ
Project Designation 221-U Canyon Disposition Initiative - Electrical Galleries S	Sampling Location 221-U plant		SAF No. B99-030
Ice Chest No. ERC 99-002	Field Logbook No. EFL 1133-6		Method of Shipment Fed Ex 235745202634-4.2
Shipped To ~~TMA~~/RECRA 8/0 12-7-98	Offsite Property No.		Bill of Lading/Air Bill No.
			COA

Price Code IV

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	Cool 4C	None	None	None	None	None	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60ml	60mL	60ml	60mL	60ml	1000ml		
SAMPLE ANALYSIS	PCBs - 8082	Activity Scan	Gross Alpha Gross Beta	Isotopic Plutonium Isotopic Uranium Isotopic Thorium Americium 241	Metals by ICP (TCLP) 1311/6010 Mercury (TCLP) - 1311/7470	pH (Soil) - 9045	Strontium-89,90 - Total Sr	See item (1) in Special Instructions		

Sample No	Matrix *	Sample Date	Sample Time	PCBs - 8082	Activity Scan	Gross Alpha Gross Beta	Isotopic	Metals	pH	Strontium	See item (1)		
B0TB06	Other Solid	12-4-98	1315	X				X	X				
B0TB07	Other Solid	12-4-98	1320	X				X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 12-7-98/1030	Received By Fed Ex	Date/Time
Relinquished By [signature]	Date/Time	Received By [signature]	Date/Time 12/10/98 1030
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** Close SDG upon receipt of samples

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-030
RFW# : 9812L631
SDG/SAF# : H0323/B99-030

W.O.# : 10985-001-001-9999-00
Date Received: 12-10-98

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits.

7. All preparation/method blanks were within method criteria (less than 5% of RCRA action level). Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

11. The TCLP extract from sample B0TB07 was selected for the matrix spike (MS) for this analytical batch. The matrix spike for Barium was below 50% recovery at 35.4 %. The recovery in the TCLP Leachate was below 80-120% of the action level so standard addition was not required per Federal Register, Vol.57, No.227, Nov. 24, 1992, page 55117.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

Pat C

1-12-99

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

Date

jjw/m12-631

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9812L631

Leaching Procedure: __1310 X1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A X3010A __3015 __3020A __3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	X6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	X6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	X7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	__6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	X6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/11/99

CLIENT: TNU-HANFORD B99-030 RECRA LOT #: 9812L631

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0TB06	Silver, TCLP Leachate	3.5	u	UG/L	3.5	1.0
		Arsenic, TCLP Leachate	54.4		UG/L	31.9	1.0
		Barium, TCLP Leachate	599		UG/L	3.1	1.0
		Cadmium, TCLP Leachate	38.5		UG/L	4.3	1.0
		Chromium, TCLP Leachate	42.7		UG/L	4.8	1.0
		Mercury, TCLP Leachate	140		UG/L	2.0	20.0
		Lead, TCLP Leachate	37.0		UG/L	33.7	1.0
		Selenium, TCLP Leachate	57.6	u	UG/L	57.6	1.0
-004	B0TB07	Silver, TCLP Leachate	3.5	u	UG/L	3.5	1.0
		Arsenic, TCLP Leachate	31.9	u	UG/L	31.9	1.0
		Barium, TCLP Leachate	486		UG/L	3.1	1.0
		Cadmium, TCLP Leachate	52.8		UG/L	4.3	1.0
		Chromium, TCLP Leachate	28.9		UG/L	4.8	1.0
		Mercury, TCLP Leachate	73.6		UG/L	2.0	20.0
		Lead, TCLP Leachate	33.7	u	UG/L	33.7	1.0
		Selenium, TCLP Leachate	57.6	u	UG/L	57.6	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/11/99

CLIENT: TNU-HANFORD B99-030 RECRA LOT #: 9812L631

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	98L1514-MB1	Silver, TCLP Leachate	3.5	u	UG/L	3.5	1.0
		Arsenic, TCLP Leachate	31.9	u	UG/L	31.9	1.0
		Barium, TCLP Leachate	4.1		UG/L	3.1	1.0
		Cadmium, TCLP Leachate	4.3	u	UG/L	4.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Lead, TCLP Leachate	33.7	u	UG/L	33.7	1.0
		Selenium, TCLP Leachate	57.6	u	UG/L	57.6	1.0
BLANK2	98L1514-MB2	Silver, TCLP Leachate	3.5	u	UG/L	3.5	1.0
		Arsenic, TCLP Leachate	50.9		UG/L	31.9	1.0
		Barium, TCLP Leachate	78.0		UG/L	3.1	1.0
		Cadmium, TCLP Leachate	4.3	u	UG/L	4.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Lead, TCLP Leachate	33.7	u	UG/L	33.7	1.0
		Selenium, TCLP Leachate	57.6	u	UG/L	57.6	1.0
BLANK3	98L1514-MB3	Silver, TCLP Leachate	3.5	u	UG/L	3.5	1.0
		Arsenic, TCLP Leachate	31.9	u	UG/L	31.9	1.0
		Barium, TCLP Leachate	105		UG/L	3.1	1.0
		Cadmium, TCLP Leachate	4.3	u	UG/L	4.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Lead, TCLP Leachate	33.7	u	UG/L	33.7	1.0
		Selenium, TCLP Leachate	57.6	u	UG/L	57.6	1.0
BLANK1	98C0589-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	98C0589-MB2	Mercury, Total	0.10	u	UG/L	0.10	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/11/99

CLIENT: TNU-HANFORD B99-030 RECRA LOT #: 9812L631

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B0TB07	Silver, TCLP Leachate	3740	3.5 u	5000	74.7	1.0
		Arsenic, TCLP Leachate	4900	31.9 u	5000	97.9	1.0
		Barium, TCLP Leachate	35800	486	100000	35.4	1.0
		Cadmium, TCLP Leachate	991	52.8	1000	93.8	1.0
		Chromium, TCLP Leachat	4470	28.9	5000	88.9	1.0
		Mercury, TCLP Leachate	247	73.6	200	86.8	50.0
		Lead, TCLP Leachate	4450	33.7 u	5000	88.9	1.0
		Selenium, TCLP Leachat	1010	57.6 u	1000	101.1	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/11/99

CLIENT: TNU-HANFORD B99-030 RECRA LOT #: 9812L631

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	B0TB06	Mercury, TCLP Leachate	140	141	0.64	20.0
-004REP	B0TB07	Silver, TCLP Leachate	3.5 u	3.5 u	NC	1.0
		Arsenic, TCLP Leachate	31.9 u	37.0	~~NC~~ 200	1.0
		Barium, TCLP Leachate	486	486	0.082 MW 1/11/99	1.0
		Cadmium, TCLP Leachate	52.8	52.7	0.19	1.0
		Chromium, TCLP Leachate	28.9	28.6	1.0	1.0
		Lead, TCLP Leachate	33.7 u	52.7	~~NC~~ 200	1.0
		Selenium, TCLP Leachate	57.6 u	57.6 u	NC MW 1/11/99	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/11/99

CLIENT: TNU-HANFORD B99-030 RECRA LOT #: 9812L631

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	98L1514-LC1	Silver, LCS	498	500	UG/L	99.6
		Arsenic, LCS	9740	10000	UG/L	97.4
		Barium, LCS	4930	5000	UG/L	98.5
		Cadmium, LCS	248	250	UG/L	99.2
		Chromium, LCS	491	500	UG/L	98.3
		Lead, LCS	2430	2500	UG/L	97.2
		Selenium, LCS	9660	10000	UG/L	96.6
LCS1	98C0589-LC1	Mercury, LCS	5.1	5.0	UG/L	101.5

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-030

DATE RECEIVED: 12/10/98 RFW LOT # :9812L631

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TB06						
TCLP	001	S	98LTO207	12/04/98	12/22/98	12/23/98
B0TB07						
TCLP	002	S	98LTO207	12/04/98	12/22/98	12/23/98
B0TB06						
SILVER, TCLP LEACHAT	003	W	98L1514	12/23/98	12/23/98	12/24/98
ARSENIC, TCLP LEACHA	003	W	98L1514	12/23/98	12/23/98	12/24/98
BARIUM, TCLP LEACHAT	003	W	98L1514	12/23/98	12/23/98	12/24/98
CADMIUM, TCLP LEACHA	003	W	98L1514	12/23/98	12/23/98	12/24/98
CHROMIUM, TCLP LEACH	003	W	98L1514	12/23/98	12/23/98	12/24/98
MERCURY, TCLP LEACHA	003	W	98C0589	12/23/98	12/24/98	12/28/98
MERCURY, TCLP LEACHA	003 REP	W	98C0589	12/23/98	12/24/98	12/28/98
LEAD, TCLP LEACHATE	003	W	98L1514	12/23/98	12/23/98	12/24/98
SELENIUM, TCLP LEACH	003	W	98L1514	12/23/98	12/23/98	12/24/98
B0TB07						
SILVER, TCLP LEACHAT	004	W	98L1514	12/23/98	12/23/98	12/24/98
SILVER, TCLP LEACHAT	004 REP	W	98L1514	12/23/98	12/23/98	12/24/98
SILVER, TCLP LEACHAT	004 MS	W	98L1514	12/23/98	12/23/98	12/24/98
ARSENIC, TCLP LEACHA	004	W	98L1514	12/23/98	12/23/98	12/24/98
ARSENIC, TCLP LEACHA	004 REP	W	98L1514	12/23/98	12/23/98	12/24/98
ARSENIC, TCLP LEACHA	004 MS	W	98L1514	12/23/98	12/23/98	12/24/98
BARIUM, TCLP LEACHAT	004	W	98L1514	12/23/98	12/23/98	12/24/98
BARIUM, TCLP LEACHAT	004 REP	W	98L1514	12/23/98	12/23/98	12/24/98
BARIUM, TCLP LEACHAT	004 MS	W	98L1514	12/23/98	12/23/98	12/24/98
CADMIUM, TCLP LEACHA	004	W	98L1514	12/23/98	12/23/98	12/24/98
CADMIUM, TCLP LEACHA	004 REP	W	98L1514	12/23/98	12/23/98	12/24/98
CADMIUM, TCLP LEACHA	004 MS	W	98L1514	12/23/98	12/23/98	12/24/98
CHROMIUM, TCLP LEACH	004	W	98L1514	12/23/98	12/23/98	12/24/98
CHROMIUM, TCLP LEACH	004 REP	W	98L1514	12/23/98	12/23/98	12/24/98
CHROMIUM, TCLP LEACH	004 MS	W	98L1514	12/23/98	12/23/98	12/24/98

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-030

DATE RECEIVED: 12/10/98 RFW LOT # :9812L631

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TCLP LEACHA	004	W	98C0589	12/23/98	12/24/98	12/28/98
MERCURY, TCLP LEACHA	004 MS	W	98C0589	12/23/98	12/24/98	12/28/98
LEAD, TCLP LEACHATE	004	W	98L1514	12/23/98	12/23/98	12/24/98
LEAD, TCLP LEACHATE	004 REP	W	98L1514	12/23/98	12/23/98	12/24/98
LEAD, TCLP LEACHATE	004 MS	W	98L1514	12/23/98	12/23/98	12/24/98
SELENIUM, TCLP LEACH	004	W	98L1514	12/23/98	12/23/98	12/24/98
SELENIUM, TCLP LEACH	004 REP	W	98L1514	12/23/98	12/23/98	12/24/98
SELENIUM, TCLP LEACH	004 MS	W	98L1514	12/23/98	12/23/98	12/24/98

LAB QC:

SILVER LABORATORY	LC1 BS	W	98L1514	N/A	12/23/98	12/24/98
SILVER, TCLP LEACHAT	MB1	W	98L1514	N/A	12/23/98	12/24/98
SILVER, TCLP LEACHAT	MB2	W	98L1514	N/A	12/23/98	12/24/98
SILVER, TCLP LEACHAT	MB3	W	98L1514	N/A	12/23/98	12/24/98
ARSENIC LABORATORY	LC1 BS	W	98L1514	N/A	12/23/98	12/24/98
ARSENIC, TCLP LEACHA	MB1	W	98L1514	N/A	12/23/98	12/24/98
ARSENIC, TCLP LEACHA	MB2	W	98L1514	N/A	12/23/98	12/24/98
ARSENIC, TCLP LEACHA	MB3	W	98L1514	N/A	12/23/98	12/24/98
BARIUM LABORATORY	LC1 BS	W	98L1514	N/A	12/23/98	12/24/98
BARIUM, TCLP LEACHAT	MB1	W	98L1514	N/A	12/23/98	12/24/98
BARIUM, TCLP LEACHAT	MB2	W	98L1514	N/A	12/23/98	12/24/98
BARIUM, TCLP LEACHAT	MB3	W	98L1514	N/A	12/23/98	12/24/98
CADMIUM LABORATORY	LC1 BS	W	98L1514	N/A	12/23/98	12/24/98
CADMIUM, TCLP LEACHA	MB1	W	98L1514	N/A	12/23/98	12/24/98
CADMIUM, TCLP LEACHA	MB2	W	98L1514	N/A	12/23/98	12/24/98
CADMIUM, TCLP LEACHA	MB3	W	98L1514	N/A	12/23/98	12/24/98
CHROMIUM LABORATORY	LC1 BS	W	98L1514	N/A	12/23/98	12/24/98
CHROMIUM, TCLP LEACH	MB1	W	98L1514	N/A	12/23/98	12/24/98
CHROMIUM, TCLP LEACH	MB2	W	98L1514	N/A	12/23/98	12/24/98
CHROMIUM, TCLP LEACH	MB3	W	98L1514	N/A	12/23/98	12/24/98
MERCURY LABORATORY	LC1 BS	W	98C0589	N/A	12/24/98	12/28/98
MERCURY, TOTAL	MB1	W	98C0589	N/A	12/24/98	12/28/98
MERCURY, TOTAL	MB2	W	98C0589	N/A	12/24/98	12/28/98
LEAD LABORATORY	LC1 BS	W	98L1514	N/A	12/23/98	12/24/98
LEAD, TCLP LEACHATE	MB1	W	98L1514	N/A	12/23/98	12/24/98
LEAD, TCLP LEACHATE	MB2	W	98L1514	N/A	12/23/98	12/24/98
LEAD, TCLP LEACHATE	MB3	W	98L1514	N/A	12/23/98	12/24/98

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-030

DATE RECEIVED: 12/10/98 RFW LOT # :9812L631

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM LABORATORY	LC1 BS	W	98L1514	N/A	12/23/98	12/24/98
SELENIUM, TCLP LEACH	MB1	W	98L1514	N/A	12/23/98	12/24/98
SELENIUM, TCLP LEACH	MB2	W	98L1514	N/A	12/23/98	12/24/98
SELENIUM, TCLP LEACH	MB3	W	98L1514	N/A	12/23/98	12/24/98

RECRA LabNet Use Only: 9812G631

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B99-030
Est. Final Proj. Sampling Date
Project #: 10985-001-001-9999-00
Project Contact/Phone #
RECRA Project Manager: DT
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 12/10/98 Date Due: 1/9/99
Account #

Refrigerator #		6	6		6		
#/Type Container	Liquid						
	Solid	1g	1g		1g		
Volume	Liquid						
	Solid	60	60		60		
Preservatives							

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

RECRA LabNet Use Only

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8PCB	TCLP	RCRATCL	TPH
001	BØTBØ6			S	12/4/98	1325	✓	✓		✓
2	7			S	↓	1320	✓	✓		✓
3	6 tclp of 001			L	*	-			✓	
4	7 of 002			L	↓	-			✓	

Special Instructions:
saf # B99-030

COMPOSITE WASTE

013

DATE/REVISIONS:
1. * see labchron
2. Run matrix QC
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Decker	Toler	12/10/98	1000

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES
* 4235795200 34

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 4 2 C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-030-01	Page 1 of 1

Collector: Doug Bowers	Company Contact: Doug Bryant; Telephone No.: 373-7251	Project Coordinator: TRENT, SJ	Price Code: IV
Project Designation: 221-U Canyon Disposition Initiative - Electrical Galleries S	Sampling Location: 221-U plant	SAF No.: B99-030	Data Turnaround: 45 Days
Ice Chest No.: ERC 99-002	Field Logbook No.: EFL-1133-6	Method of Shipment: Fed Ex 273579520234-42	
Shipped To: ~~TMA~~ RECRA BID 12-7-98	Offsite Property No.:	Bill of Lading/Air Bill No.:	
		COA: (153)	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive

Special Handling and/or Storage

Preservation				Cool 4C	None	None	None	None	None	None	None	
Type of Container				aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)				1	1	1	1	1	1	1	1	
Volume				60ml	60ml	60ml	60ml	60ml	60ml	60ml	1000ml	
SAMPLE ANALYSIS				PCBs - 8082	Activity Scan	Gross Alpha Gross Beta	Isotopic Plutonium Isotopic Uranium Isotopic Thorium Americium-241	Metals by ICP (TCLP) - 1311/6010 Mercury (TCLP) - 1311/7470	pH (Soil) - 9045	Strontium-89/90 -- Total Sr	See item (1) in Special Instructions	
Sample No.	Matrix *	Sample Date	Sample Time									
B0TB06	Other Solid	12-4-98	1335	X				X	X			
B0TB07	Other Solid	12-4-98	1330	X				X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 12-7-98/1030	Received By: Fed Ex	Date/Time:
Relinquished By: [illegible]	Date/Time:	Received By: [illegible]	Date/Time: 12/8/98 [illegible]
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS
** Close SDG upon receipt of samples

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

[illegible handwriting]

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

014

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-030
RFW# : 9812L631
SDG# : H0323
SAF# : B99-030

W.O. # : 10985-001-001-9999-00
Date Received: 12-10-98

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

4. The cooler temperature was recorded on the chain-of-custody.

5. The replicate analysis for pH was within the 20% Relative Percent Difference (RPD) control limit.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-3-98
Date

mjp\12-631

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

WET CHEMISTRY
METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	ASTM	SW846	OTHER
%Ash	_ D2216-80		
%Moisture	_ D2216-80		_ ILMO4.0 (e)
%Solids			✓ ILMO4.0 (e)
%Volatile Solids	_ D2216-80		
ASTM Extraction in Water	_ D3987-81/85		
BTU	_ D240-87		
CEC		_ 9081	_ c
Corrosivity _ by coupon _ by pH		_ 1110 (mod) _ 9045	
Cyanide, Total		_ 9010	_ ILMO4.0 (e)
Cyanide, Reactive		_ Sec 7.3	
Density			_ b
Halides, Extractable Organic			_ EPA 600/4/84-008 (mod)
Halides, Total			_ EPA 600/4/84-008 (mod)
EP-Toxicity		_ 1310A	
Flash Point		_ 1010	
Ignitability		_ 1010	
Carbon, Total Organic (by LOI)			_ c
Oil and Grease		_ 9071A	
Carbon, Total Organic		_ 9060	_ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	_ D240-87 (mod)	_ 5050	
Petroleum Hydrocarbons, Total Recoverable		_ 9071	_ EPA 418.1 (mod)
pH, Soil		✓ 9045B	
Sulfide, Reactive		_ Sec 7.3	
Specific Gravity	_ D1429-76C		
Sulfur, Total		_ 9056	
TCLP		_ 1311	
TCLV		_ 1311	
Synthetic Precipitation Leach		_ 1312	
Chlorine, Total		_ 9056	
Paint Filter		_ 9095	

Other: ____________________ Method: ____________________

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/31/98

CLIENT: TNU-HANFORD B99-030 RECRA LOT #: 9812L631

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0TB06	% Solids	78.2	%	0.01	1.0
		pH	9.1	SOIL PH	0.01	1.0
-002	B0TB07	% Solids	76.9	%	0.01	1.0
		pH	9.2	SOIL PH	0.01	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/31/98

CLIENT: TNU-HANFORD B99-030 RECRA LOT #: 9812L631

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0TB06	pH	9.1	9.1	0.4	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-030

DATE RECEIVED: 12/10/98 RFW LOT # :9812L631

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TB06						
% SOLIDS	001	S	98L%S231	12/04/98	12/14/98	12/15/98
PH	001	S	98LPH127	12/04/98	12/28/98	12/28/98
PH	001 REP	S	98LPH129	12/04/98	12/30/98	12/30/98
TCLP	001	S	98LTO207	12/04/98	12/22/98	12/23/98
B0TB07						
% SOLIDS	002	S	98L%S231	12/04/98	12/14/98	12/15/98
PH	002	S	98LPH127	12/04/98	12/28/98	12/28/98
TCLP	002	S	98LTO207	12/04/98	12/22/98	12/23/98

RECRA LabNet Use Only
98126631

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-030
Est. Final Proj. Sampling Date
Project # 10986-001-001-9999-00
Project Contact/Phone #
RECRA Project Manager: DT
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 12/10/98 Date Due: 1/9/99
Account #

Refrigerator #				6			6			6			
#/Type Container	Liquid												
	Solid			1g			1g			1g			
Volume	Liquid												
	Solid			60			60			60			
Preservatives													
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: Metal	CN				

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only: 8PCB	TCLP	RCRATCLP	TPH
001	BØTBØ6			S	12/4/98	1325	✓	✓		✓
2	7			S	↓	1320	✓	✓		✓
3	6 tclp of 001			L	*	-			✓	
4	7 of 002			L	↓	-			✓	

Special Instructions:
saf # B99-030

COMPOSITE WASTE

DATE/REVISIONS:
1. * see laiciron
2. Run matrix QC
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Decker	Jaler	12/10/98	1000

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES
* 4235795200634

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 4.2° C

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Bechtel Hanford Inc.		B99-030-01	Page 1 of 1

Collector Doug Bowers	**Company Contact** Doug Bryant — **Telephone No.** 373-7251	**Project Coordinator** TRENT, SJ
Project Designation 221-U Canyon Disposition Initiative - Electrical Galleries S	**Sampling Location** 221-U plant	**SAF No.** B99-030
Ice Chest No. ERC 99-002	**Field Logbook No.** EFL-1133-6	**Method of Shipment** Fed Ex 2735 7452 0634 - 4.2
Shipped To ~~TMA~~/RECRA RB 12-7-98	**Offsite Property No.**	**Bill of Lading/Air Bill No.**
		COA

Price Code IV

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	Cool 4C	None	None	None	None	None	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60ml	60ml	60ml	60ml	60ml	60ml	60ml	1000ml		
SAMPLE ANALYSIS	PCBs - 8082	Activity Scan	Gross Alpha Gross Beta	Isotopic Plutonium Isotopic Uranium Isotopic Thorium Americium 241	Metals by ICP (TCLP) 1311/6010 Mercury (TCLP) 1311/7470	pH (Soil) - 9045	Strontium-89,90 -- Total Sr	See item (1) in Special Instructions		

Sample No	Matrix *	Sample Date	Sample Time	PCBs - 8082	Activity Scan	Gross Alpha Gross Beta	Isotopic	Metals by ICP	pH (Soil)	Strontium	See item (1)		
B0TB06	Other Solid	12-4-98	1335	X				X	X				
B0TB07	Other Solid	12-4-98	1320	X				X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 12-7-98/1030	Received By Fed Ex	Date/Time
Relinquished By J Abel	Date/Time	Received By [illegible]	Date/Time 12/10/98 [illegible]
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** Close SDG upon receipt of samples

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0323 is comprised of two solid (soil) samples designated under SAF No. B99-030 with a Project Designation of: 221-U Canyon Disposition Initiative - Electrical Galleries S.

The samples were received as stated on the Chain-of-Custody document.

2.0 ANALYSIS NOTES

2.1 Gross Alpha/Gross Beta Analyses

The gross beta QC blank was contaminated by the gross beta activity of the samples. The contamination was less than the RDL.

2.2 Total Strontium Analyses

No problems were encountered in the processing of the sample.

2.3 Isotopic Thorium Analyses

The yield for the analysis was 6% for sample B0TB06. The Th-228 results may be biased high by up to 20% due to Pu-239 breakthrough during chemistry.

2.4 Isotopic Uranium Analyses

No problems were encountered in the processing of the sample.

2.5 Isotopic Plutonium Analyses

The aliquot for the analysis was reduced for more expedient processing. Positive Pu-239/240 activity was detected in both sample, and positive Pu-238 activity was detected in sample B0TB07.

2.6 Americium-241 Analyses

The aliquot for the analysis was reduced to 0.5g for expedient sample processing. Positive Am-241 activity was detected in both samples.

2.7 Gamma Scan Analyses

No problems were encountered in the processing of the samples.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

SAMPLE SUMMARY

SDG 7075
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-2[illegible]25
Case no SDG-H0323

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0TB06	221-U plant	SOLID		N812056-01	B99-030	B99-030-01	12/04 98 13:25
B0TB07	221-U plant	SOLID		N812056-02	B99-030	B99-030-01	12/04 98 13:20
Method Blank		SOLID		N812056-04	B99-030		
Lab Control Sample		SOLID		N812056-03	B99-030		
Duplicate (N812056-01)	221-U plant	SOLID		N812056-05	B99-030		12/04 98 13:25

Lab id [illegible]
Protocol Hanford
Version [illegible]
Form [illegible]
Version [illegible]
Report date [illegible]

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

QC SUMMARY

SDG 7075
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7075	B99-030-01	B0TB06	SOLID	78.5			12/10/98	6	N812056-01	7075-001
		B0TB07	SOLID	79.0			12/10/98	6	N812056-02	7075-002
		Method Blank	SOLID						N812056-04	7075-004
		Lab Control Sample	SOLID						N812056-03	7075-003
		Duplicate (N812056-01)	SOLID	78.5			12/10/98	6	N812056-05	7075-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

SDG 7075
Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	2857-119	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	2857-119	5.0	2			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	2857-119	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	2857-119	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	2857-119	10.0	2			1	1	1/1		
Gas Proportional Counting												
80A	SOLID	Gross Alpha in Soil	2857-119	20.0	2			1	1	1/1		
80B	SOLID	Gross Beta in Soil	2857-119	15.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	2857-119	15.0	2			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

WORK SUMMARY

SDG 7075
Contact L.A. Johnson

Client Hanford
Contract DRB-SBB-207925
Case no SDG-H0323

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0TB06			N812056-01	7075-001	80A/80		01/09/99	01/20/99	DER	Gross Alpha in Soil
221-U plant		SOLID	12/04/98	7075-001	80B/80		01/09/99	01/20/99	DER	Gross Beta in Soil
B99-030-01	B99-030		12/10/98	7075-001	AM		01/11/99	01/20/99	DER	Americium 241 in Soil
				7075-001	GAM		12/29/98	01/20/99	DER	Gamma Scan
				7075-001	PU		01/07/99	01/20/99	DER	Plutonium, Isotopic in Solids
				7075-001	SR		01/04/99	01/20/99	DER	Total Strontium in Soil
				7075-001	TH		01/12/99	01/20/99	DER	Thorium, Isotopic in Soil
				7075-001	U		12/31/98	01/20/99	DER	Uranium, Isotopic in Soil
B0TB07			N812056-02	7075-002	80A/80		01/09/99	01/20/99	DER	Gross Alpha in Soil
221-U plant		SOLID	12/04/98	7075-002	80B/80		01/09/99	01/20/99	DER	Gross Beta in Soil
B99-030-01	B99-030		12/10/98	7075-002	AM		01/08/99	01/20/99	DER	Americium 241 in Soil
				7075-002	GAM		12/29/98	01/20/99	DER	Gamma Scan
				7075-002	PU		01/07/99	01/20/99	DER	Plutonium, Isotopic in Solids
				7075-002	SR		01/04/99	01/20/99	DER	Total Strontium in Soil
				7075-002	TH		01/12/99	01/20/99	DER	Thorium, Isotopic in Soil
				7075-002	U		12/31/98	01/20/99	DER	Uranium, Isotopic in Soil
Method Blank			N812056-04	7075-004	80A/80		01/09/99	01/20/99	DER	Gross Alpha in Soil
		SOLID		7075-004	80B/80		01/09/99	01/20/99	DER	Gross Beta in Soil
	B99-030			7075-004	AM		01/12/99	01/20/99	DER	Americium 241 in Soil
				7075-004	GAM		12/29/98	01/20/99	DER	Gamma Scan
				7075-004	PU		01/12/99	01/20/99	DER	Plutonium, Isotopic in Solids
				7075-004	SR		01/04/99	01/20/99	DER	Total Strontium in Soil
				7075-004	TH		01/15/99	01/20/99	DER	Thorium, Isotopic in Soil
				7075-004	U		12/31/98	01/20/99	DER	Uranium, Isotopic in Soil
Lab Control Sample			N812056-03	7075-003	80A/80		01/09/99	01/20/99	DER	Gross Alpha in Soil
		SOLID		7075-003	80B/80		01/09/99	01/20/99	DER	Gross Beta in Soil
	B99-030			7075-003	AM		01/07/99	01/20/99	DER	Americium 241 in Soil
				7075-003	GAM		12/29/98	01/20/99	DER	Gamma Scan
				7075-003	PU		01/11/99	01/20/99	DER	Plutonium, Isotopic in Solids
				7075-003	SR		01/04/99	01/20/99	DER	Total Strontium in Soil
				7075-003	TH		01/12/99	01/20/99	DER	Thorium, Isotopic in Soil
				7075-003	U		12/31/98	01/20/99	DER	Uranium, Isotopic in Soil

Lab id TMAN
Protocol Hanford
Version Ver 1.
Form SVD-700
Version 3.0
Report date 01/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

SDG 7075
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (N812056-01)			N812056-05	7075-005	80A/80		01/09/99	01/20/99	DER	Gross Alpha in Soil
221-U plant		SOLID	12/04/98	7075-005	80B/80		01/09/99	01/20/99	DER	Gross Beta in Soil
	B99-030		12/10/98	7075-005	AM		01/11/99	01/20/99	DER	Americium 241 in Soil
				7075-005	GAM		12/29/98	01/20/99	DER	Gamma Scan
				7075-005	PU		01/11/99	01/20/99	DER	Plutonium, Isotopic in Solids
				7075-005	SR		01/04/99	01/20/99	DER	Total Strontium in Soil
				7075-005	TH		01/12/99	01/20/99	DER	Thorium, Isotopic in Soil
				7075-005	U		12/31/98	01/20/99	DER	Uranium, Isotopic in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	B99-030	Gross Alpha in Soil	EPA900.0	2			1	1	1	5
80B/80	B99-030	Gross Beta in Soil	EPA900.0	2			1	1	1	5
AM	B99-030	Americium 241 in Soil	AM/CMPLATE	2			1	1	1	5
GAM	B99-030	Gamma Scan	GAMMAHI	2			1	1	1	5
PU	B99-030	Plutonium, Isotopic in Solids	PUPLATE	2			1	1	1	5
SR	B99-030	Total Strontium in Soil		2			1	1	1	5
TH	B99-030	Thorium, Isotopic in Soil	THPLATE	2			1	1	1	5
U	B99-030	Uranium, Isotopic in Soil	UPLATE	2			1	1	1	5
TOTALS				16			8	8	8	40

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 1.06
Report date 01/22/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0323

N812056-04

METHOD BLANK

Method Blank

SDG 7075 Client/Case no Hanford SDG-H0323
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N812056-04 Client sample id Method Blank
Dept sample id 7075-004 Material/Matrix SOLID
SAF No B99-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.1	3.1	4.4	10	U	80A
Gross Beta	12587-47-2	9.4	4.2	6.1	10	J	80B
Uranium 233/234	U-233/234	0	0.023	0.089	0.30	U	U
Uranium 235	15117-96-1	0	0.028	0.11	0.30	U	U
Uranium 238	U-238	0	0.023	0.089	0.30	U	U
Plutonium 238	13981-16-3	0.005	0.016	0.029	0.050	U	PU
Plutonium 239/240	PU-239/240	0.008	0.021	0.040	0.050	U	PU
Americium 241	14596-10-2	0.002	0.008	0.016	0.050	U	AM
Total Strontium	(SR-RAD)	-0.018	0.16	0.22	1.0	U	SR
Thorium 228	14274-82-9	0.022	0.13	0.24		U	TH
Thorium 230	14269-63-7	U		0.39		U	TH
Thorium 232	TH-232	0.044	0.088	0.17		U	TH
Potassium 40	13966-00-2	U		0.15		U	GAM
Cobalt 60	10198-40-0	U		0.011	0.050	U	GAM
Cesium 137	10045-97-3	U		0.011	0.050	U	GAM
Europium 152	14683-23-9	U		0.025	0.10	U	GAM
Europium 154	15585-10-1	U		0.031	0.10	U	GAM
Europium 155	14391-16-3	U		0.024	0.10	U	GAM
Americium 241	14596-10-2	U		0.032		U	GAM
Uranium 238	U-238	U		1.1		U	GAM
Uranium 235	15117-96-1	U		0.037		U	GAM

221-U Canyon Dispo. Int-Elec Gals S

QC-BLANK 29850

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

N812056-03

LAB CONTROL SAMPLE

Lab Control Sample

SDG 7075
Contact L.A. Johnson

Client/Case no Hanford SDG-H0323
Case no TRB-SBB-207335

Lab sample id N812056-03
Dept sample id 7075-003

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-030

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	220	16	3.0	10		80A	201	8.0	110	64-136	80-120
Gross Beta	220	11	7.0	10	B	80B	230	9.2	96	76-124	80-120
Uranium 233/234	3.6	0.48	0.24	0.30		U	3.80	0.15	95	79-121	80-120
Uranium 235	2.9	0.41	0.076	0.30		U	3.11	0.12	93	78-122	80-120
Uranium 238	3.9	0.49	0.23	0.30		U	3.92	0.16	99	79-121	80-120
Plutonium 238	4.7	0.30	0.010	0.050		PU	5.04	0.20	93	87-113	80-120
Plutonium 239/240	5.0	0.31	0.015	0.050		PU	5.29	0.21	95	87-113	80-120
Americium 241	4.5	0.38	0.020	0.050		AM	4.80	0.19	94	85-115	80-120
Total Strontium	12	0.51	0.23	1.0		SR	11.5	0.46	104	81-119	
Thorium 230	56	3.7	0.37			TH	51.0	2.0	110	85-115	
Cobalt 60	0.32	0.027	0.015	0.050		GAM	0.317	0.013	101	73-127	80-120
Cesium 137	0.38	0.026	0.017	0.050		GAM	0.349	0.014	109	72-128	80-120

221-U Canyon Dispo. Int-Elec Gals S

QC-LCS 29849

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

N812056-05

B0TB06

DUPLICATE

SDG 7075 | Client/Case no Hanford | SDG-H0323

Contact L.A. Johnson | Case no TRB-SBB-207925

DUPLICATE	ORIGINAL	
Lab sample id N812056-05	Lab sample id N812056-01	Client sample id B0TB06
Dept sample id 7075-005	Dept sample id 7075-001	Location/Matrix 221-U plant SOLID
	Received 12/10/98	Collected 12/04/98 13:25
% solids 78.5	% solids 78.5	Custody/SAF No B99-030-01 B99-030

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	14	5.2	4.2	10		80A	14	5.1	3.7		0	89
Gross Beta	180	9.9	6.7	10	B	80B	190	10	7.7	B	5	84
Uranium 233/234	3.5	0.44	0.098	0.30		U	3.9	0.54	0.12		11	80
Uranium 235	0.36	0.12	0.074	0.30		U	0.30	0.13	0.097		18	81
Uranium 238	3.4	0.44	0.098	0.30		U	3.7	0.53	0.10		8	81
Plutonium 238	0.081	0.031	0.027	0.050		PU	0.022	0.033	0.052	U	115	132
Plutonium 239/240	4.0	0.27	0.021	0.050		PU	4.0	0.42	0.060		0	22
Americium 241	0.70	0.087	0.021	0.050		AM	0.79	0.11	0.031		12	30
Total Strontium	69	1.3	0.29	1.0		SR	67	1.2	0.26		3	22
Thorium 228	0.68	0.15	0.096			TH	1.1	0.73	0.84		47	126
Thorium 230	0.69	0.16	0.10			TH	0.35	0.36	0.67	U	65	114
Thorium 232	0.45	0.12	0.055			TH	0.35	0.36	0.67	U	25	143
Potassium 40	7.8	0.26	0.098			GAM	7.8	0.43	0.21		0	33
Cobalt 60	0.34	0.021	0.015	0.050		GAM	0.35	0.035	0.028		3	37
Cesium 137	30	0.12	0.031	0.050		GAM	30	0.19	0.066		0	32
Europium 152	U		0.097	0.10	U	GAM	U		0.17	U	-	
Europium 154	0.031	0.028	0.038	0.10	U	GAM	U		0.078	U	-	
Europium 155	U		0.083	0.10	U	GAM	U		0.13	U	-	
Radium 226	0.22	0.041	0.051	0.10		GAM	0.22	0.091	0.11		0	79
Radium 228	0.28	0.059	0.064	0.20		GAM	0.33	0.088	0.099		16	61
Thorium 228	0.29	0.045	0.059			GAM	0.30	0.070	0.092		3	53
Thorium 232	0.28	0.059	0.064			GAM	0.33	0.088	0.099		16	61
Americium 241	0.33	0.057	0.091			GAM	0.18	0.12	0.19	U	59	45
Uranium 238	U		1.9		U	GAM	2.3	1.7	2.4	U	-	
Uranium 235	U		0.15		U	GAM	U		0.19	U	-	

221-U Canyon Dispo. Int-Elec Gals S

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.36
Report date 01/22/99

N812056-05

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

DUPLICATE, cont.

B0TB06

SDG 7075
Contact L.A. Johnson

Client/Case no Hanford SDG-H0323
Case no TRB-SBB-207925

DUPLICATE	ORIGINAL	
Lab sample id N812056-05	Lab sample id N812056-01	Client sample id B0TB06
Dept sample id 7075-005	Dept sample id 7075-001	Location/Matrix 221-U plant SOLID
	Received 12/10/98	Collected 12/04/98 13:25
% solids 78.5	% solids 78.5	Custody/SAF No B99-030-01 B99-030

QC-DUP#1 29851

Lab id TMANW
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 1.0
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

DATA SHEET

N812056-01

B0TB06

SDG 7075 Client/Case no Hanford SDG-H0323
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N812056-01 Client sample id B0TB06
Dept sample id 7075-001 Location/Matrix 221-U plant SOLID
Received 12/10/98 Collected 12/04/98 13:25
% solids 78.5 Custody/SAF No B99-030-01 B99-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	14	5.1	3.7	10		80A
Gross Beta	12587-47-2	190	10	7.7	10	B	80B
Uranium 233/234	U-233/234	3.9	0.54	0.12	0.30		U
Uranium 235	15117-96-1	0.30	0.13	0.097	0.30		U
Uranium 238	U-238	3.7	0.53	0.10	0.30		U
Plutonium 238	13981-16-3	0.022	0.033	0.052	0.050	U	PU
Plutonium 239/240	PU-239/240	4.0	0.42	0.060	0.050		PU
Americium 241	14596-10-2	0.79	0.11	0.031	0.050		AM
Total Strontium	(SR-RAD)	67	1.2	0.26	1.0		SR
Thorium 228	14274-82-9	1.1	0.73	0.84			TH
Thorium 230	14269-63-7	0.35	0.36	0.67		U	TH
Thorium 232	TH-232	0.35	0.36	0.67		U	TH
Potassium 40	13966-00-2	7.8	0.43	0.21			GAM
Cobalt 60	10198-40-0	0.35	0.035	0.028	0.050		GAM
Cesium 137	10045-97-3	30	0.19	0.066	0.050		GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.078	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Radium 226	13982-63-3	0.22	0.091	0.11	0.10		GAM
Radium 228	15262-20-1	0.33	0.088	0.099	0.20		GAM
Thorium 228	14274-82-9	0.30	0.070	0.092			GAM
Thorium 232	TH-232	0.33	0.088	0.099			GAM
Americium 241	14596-10-2	0.18	0.12	0.19		U	GAM
Uranium 238	U-238	2.3	1.7	2.4		U	GAM
Uranium 235	15117-96-1	U		0.19		U	GAM

221-U Canyon Dispo. Int-Elec Gals S

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/22/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0323

N812056-02

DATA SHEET

B0TB07

SDG 7075 Client/Case no Hanford SDG-H0323
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N812056-02 Client sample id B0TB07
Dept sample id 7075-002 Location/Matrix 221-U plant SOLID
Received 12/10/98 Collected 12/04/98 13:20
% solids 79.0 Custody/SAF No B99-030-01 B99-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	11	5.1	4.1	10		80A
Gross Beta	12587-47-2	210	11	6.6	10	B	80B
Uranium 233/234	U-233/234	3.6	0.48	0.11	0.30		U
Uranium 235	15117-96-1	0.31	0.12	0.086	0.30		U
Uranium 238	U-238	3.1	0.43	0.10	0.30		U
Plutonium 238	13981-16-3	0.15	0.060	0.045	0.050		PU
Plutonium 239/240	PU-239/240	3.9	0.44	0.045	0.050		PU
Americium 241	14596-10-2	0.73	0.19	0.075	0.050		AM
Total Strontium	(SR-RAD)	67	1.2	0.25	1.0		SR
Thorium 228	14274-82-9	0.70	0.14	0.061			TH
Thorium 230	14269-63-7	0.58	0.12	0.10			TH
Thorium 232	TH-232	0.42	0.10	0.042			TH
Potassium 40	13966-00-2	7.5	0.25	0.11			GAM
Cobalt 60	10198-40-0	0.29	0.019	0.015	0.050		GAM
Cesium 137	10045-97-3	28	0.11	0.028	0.050		GAM
Europium 152	14683-23-9	U		0.094	0.10	U	GAM
Europium 154	15585-10-1	U		0.040	0.10	U	GAM
Europium 155	14391-16-3	U		0.080	0.10	U	GAM
Radium 226	13982-63-3	0.22	0.042	0.051	0.10		GAM
Radium 228	15262-20-1	0.31	0.058	0.060	0.20		GAM
Thorium 228	14274-82-9	0.29	0.043	0.056			GAM
Thorium 232	TH-232	0.31	0.058	0.060			GAM
Americium 241	14596-10-2	0.29	0.046	0.076			GAM
Uranium 238	U-238	3.1	1.5	1.7			GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

221-U Canyon Dispo. Int-Elec Gals S

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7075
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 2857-119					
B0TB06	N812056-01			7075-001	0.79
B0TB07	N812056-02			7075-002	0.73
BLK (QC ID=29850)	N812056-04			7075-004	U
LCS (QC ID=29849)	N812056-03			7075-003	ok
Duplicate (N812056-01)	N812056-05			7075-005	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050
221-U Canyon Dispo. Int-Elec Gals S					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2857-119	2σ prep error 5.0 %			Reference Lab		Notebook #2857 pg. 115										
B0TB06	N812056-01			0.031	0.500			60		1248			38	01/05/99	01/11	SS-001
B0TB07	N812056-02			0.075	0.500			80		452			35	01/05/99	01/08	SS-053
BLK (QC ID=29850)	N812056-04			0.016	1.00			81		1058				01/05/99	01/12	SS-053
LCS (QC ID=29849)	N812056-03			0.020	1.00			91		466				01/05/99	01/07	SS-059
Duplicate (N812056-01) (QC ID=29851)	N812056-05			0.021	0.500			86		1244			38	01/05/99	01/11	SS-016
Nominal values and limits from method				0.050	1.00			20-105		700	100		180			

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.033 ± 0.049
YIELD 82 ± 24

Lab is TMANC
Protocol Hanford
Version Ver 1.1
Form DVD-CMS
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7075
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 2857-119						
B0TB06	N812056-01			7075-001	U	4.0
B0TB07	N812056-02			7075-002	0.15	3.9
BLK (QC ID=29850)	N812056-04			7075-004	U	U
LCS (QC ID=29849)	N812056-03			7075-003	ok	ok
Duplicate (N812056-01)	N812056-05			7075-005	ok	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.050
221-U Canyon Dispo. Int-Elec Gals S						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2857-119 *2σ prep error* 5.0 % *Reference Lab Notebook #2857 pg. 115*																
B0TB06	N812056-01			0.060	0.500			90		481			34	01/01/99	01/07	SS-014
B0TB07	N812056-02			0.045	0.500			87		481			34	01/01/99	01/07	SS-015
BLK (QC ID=29850)	N812056-04			0.040	1.00			61		1058				01/01/99	01/12	SS-052
LCS (QC ID=29849)	N812056-03			0.015	1.00			71		1244				01/01/99	01/11	SS-013
Duplicate (N812056-01) (QC ID=29851)	N812056-05			0.027	0.500			91		1244			38	01/01/99	01/11	SS-015
Nominal values and limits from method				0.050	1.00			20-105		10	100		180			

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.037 ± 0.036
YIELD 80 ± 27

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVP-CMS
Version 3.56
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test TH Matrix SOLID
SDG 7075
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 2857-119							
B0TB06	N812056-01			7075-001	1.1	U	U
B0TB07	N812056-02			7075-002	0.70	0.58	0.42
BLK (QC ID=29850)	N812056-04			7075-004	U	U	U
LCS (QC ID=29849)	N812056-03			7075-003		ok	
Duplicate (N812056-01)	N812056-05			7075-005	ok	ok	ok

Nominal values and limits from method RDLs (pCi/g)
221-U Canyon Dispo. Int-Elec Gals S

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 2857-119 2σ prep error 5.0 % Reference Lab Notebook #2857 pg. 115																
B0TB06	N812056-01			0.84	0.500			6		490			39	01/11/99	01/12	SS-001
B0TB07	N812056-02			0.10	0.500			92		490			39	01/11/99	01/12	SS-002
BLK (QC ID=29850)	N812056-04			0.39	0.100			88		613				01/11/99	01/15	SS-006
LCS (QC ID=29849)	N812056-03			0.37	0.100			79		490				01/11/99	01/12	SS-003
Duplicate (N812056-01) (QC ID=29851)	N812056-05			0.10	0.500			68		466			39	01/11/99	01/12	SS-055
Nominal values and limits from method					0.100			20-105		200						

PROCEDURES	REFERENCE	TMPLATE
	EP-000	Data Entry and Document Preparation, rev 0
	EP-001	Q.C. Preparation, rev 0
	EP-003	Tracing, rev 0
	EP-008	Heavy Elements Electroplating, rev 0
	EP-070	Soil Dissolution, rev 0
	RP-901	Thorium Purification - Small Aliquot, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.36 ± 0.61
YIELD 67 ± 79

Lab id TMANC
Protocol Hanford
Version Ver 1.
Form DVD-CMS
Version 3.0
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

Test U Matrix SOLID
SDG 7075
Contact L.A. Johnson

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 2857-119											
B0TB06	N812056-01			7075-001	3.9	0.30	3.7	105	21	8	4
B0TB07	N812056-02			7075-002	3.6	0.31	3.1	116	22	10	4
BLK (QC ID=29850)	N812056-04			7075-004	U	U	U				
LCS (QC ID=29849)	N812056-03			7075-003	ok	ok	ok				
Duplicate (N812056-01)	N812056-05			7075-005	ok	ok	ok	103	19	11	4
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
221-U Canyon Dispo. Int-Elec Gals S							Averages	108		10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 2857-119	2σ prep error 5.0 %			Reference Lab	Notebook #2857 pg. 115											
B0TB06	N812056-01			0.12	1.00			75		153			27	12/31/98	12/31	SS-001
B0TB07	N812056-02			0.11	1.00			86		153			27	12/31/98	12/31	SS-002
BLK (QC ID=29850)	N812056-04			0.11	1.00			65		153				12/31/98	12/31	SS-004
LCS (QC ID=29849)	N812056-03			0.24	1.00			94		153				12/31/98	12/31	SS-003
Duplicate (N812056-01) (QC ID=29851)	N812056-05			0.098	1.00			97		153			27	12/31/98	12/31	SS-005
Nominal values and limits from method				0.30	1.00			30-105		150	100		180			

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.14 ± 0.12
YIELD 83 ± 27

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

Test SR Matrix SOLID
SDG 7075
Contact L.A. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 2857-119					
B0TB06	N812056-01			7075-001	67
B0TB07	N812056-02			7075-002	67
BLK (QC ID=29850)	N812056-04			7075-004	U
LCS (QC ID=29849)	N812056-03			7075-003	ok
Duplicate (N812056-01)	N812056-05			7075-005	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0
221-U Canyon Dispo. Int-Elec Gals S					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2857-119	2σ prep error 10.0 %			Reference Lab		Notebook #2857 pg. 115										
B0TB06	N812056-01			0.26	1.00			99		210			31	01/04/99	01/04	GRB-229
B0TB07	N812056-02			0.25	1.00			99		210			31	01/04/99	01/04	GRB-230
BLK (QC ID=29850)	N812056-04			0.22	1.00			72		400				01/04/99	01/04	GRB-232
LCS (QC ID=29849)	N812056-03			0.23	1.00			75		200				01/04/99	01/04	GRB-201
Duplicate (N812056-01) (QC ID=29851)	N812056-05			0.29	1.00			94		210			31	01/04/99	01/04	GRB-229
Nominal values and limits from method				1.0	1.00					100			180			

PROCEDURES RP-500 Strontium - Initial Separation, rev 0
RP-519 Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.25 ± 0.055
YIELD 88 ± 27

Lab id TMANC
Protocol Hanford
Version Ver 1.
Form DVD GMS
Version 3.0b
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

Test 80A Matrix SOLID
SDG 7075
Contact L.A. Johnson

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 2857-119					
B0TB06	N812056-01	80		7075-001	14
B0TB07	N812056-02	80		7075-002	11
BLK (QC ID=29850)	N812056-04	80		7075-004	U
LCS (QC ID=29849)	N812056-03	80		7075-003	ok
Duplicate (N812056-01)	N812056-05	80		7075-005	ok
Nominal values and limits from method				RDLs (pCi/g)	10
221-U Canyon Dispo. Int-Elec Gals S					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2857-119	2σ prep error 20.0 %			Reference Lab			Notebook #2857 pg. 115									
B0TB06	N812056-01	80		3.7	0.100			57	100				36	01/05/99	01/09	GRB-110
B0TB07	N812056-02	80		4.1	0.100			72	100				36	01/05/99	01/09	GRB-111
BLK (QC ID=29850)	N812056-04	80		4.4	0.100			38	100					01/05/99	01/09	GRB-113
LCS (QC ID=29849)	N812056-03	80		3.0	0.100			38	100					01/05/99	01/09	GRB-112
Duplicate (N812056-01) (QC ID=29851)	N812056-05	80		4.2	0.100			58	100				36	01/05/99	01/09	GRB-114
Nominal values and limits from method				10	0.100			5-150	100				180			

PROCEDURES	REFERENCE	
	EPA900.0	
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-170	Preparation of Solids for Gross Alpha and Gross Beta Counting, rev 1

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 3.9 ± 1.1
RESIDUE 53 ± 26

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

Test 80B Matrix SOLID
SDG 7075
Contact L.A. Johnson

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 2857-119					
B0TB06	N812056-01	80		7075-001	190
B0TB07	N812056-02	80		7075-002	210
BLK (QC ID=29850)	N812056-04	80		7075-004	9.4 J
LCS (QC ID=29849)	N812056-03	80		7075-003	ok
Duplicate (N812056-01)	N812056-05	80		7075-005	ok
Nominal values and limits from method				RDLs (pCi/g)	10
221-U Canyon Dispo. Int-Elec Gals S					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2857-119	2σ prep error 15.0 %			Reference Lab		Notebook #2857 pg. 115										
B0TB06	N812056-01	80		7.7	0.100			57	100				36	01/05/99	01/09	GRB-110
B0TB07	N812056-02	80		6.6	0.100			72	100				36	01/05/99	01/09	GRB-111
BLK (QC ID=29850)	N812056-04	80		6.1	0.100			38	100					01/05/99	01/09	GRB-113
LCS (QC ID=29849)	N812056-03	80		7.0	0.100			38	100					01/05/99	01/09	GRB-112
Duplicate (N812056-01) (QC ID=29851)	N812056-05	80		6.7	0.100			58	100				36	01/05/99	01/09	GRB-114
Nominal values and limits from method				10	0.100			5-150	100				180			

PROCEDURES

REFERENCE	EPA900.0	
EP-060	Soil Preparation, rev 0	
EP-070	Soil Dissolution, rev 0	
EP-170	Preparation of Solids for Gross Alpha and Gross Beta Counting, rev 1	

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 6.8 ± 1.2
RESIDUE 53 ± 29

Lab id TMANC
Protocol Hanford
Version Ver 1
Form DVD-CMS
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7075
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 2857-119						
B0TB06	N812056-01			7075-001	0.35	30
B0TB07	N812056-02			7075-002	0.29	28
BLK (QC ID=29850)	N812056-04			7075-004	U	U
LCS (QC ID=29849)	N812056-03			7075-003	ok	ok
Duplicate (N812056-01)	N812056-05			7075-005	ok	ok
Nominal values and limits from method		RDLs (pCi/g)			0.050	0.050
221-U Canyon Dispo. Int-Elec Gals S						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 2857-119	2σ prep error 15.0 % Reference Lab Notebook #2857 pg. 115															
B0TB06	N812056-01			0.066	683					408			25	12/18/98	12/29	02,03,00
B0TB07	N812056-02			0.032	716					408			25	12/18/98	12/29	02,04,00
BLK (QC ID=29850)	N812056-04			0.019	750					412				12/18/98	12/29	01,03,00
LCS (QC ID=29849)	N812056-03			0.017	750					412				12/18/98	12/29	01,01,00
Duplicate (N812056-01) (QC ID=29851)	N812056-05			0.035	683					412			25	12/18/98	12/29	02,04,00
Nominal values and limits from method				0.050	750					100			180			

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.034 ± 0.039
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.1
Form DVD-GMS
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0323

REPORT GUIDE

SDG 7075
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

SDG 7075
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

SDG 7075
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0323

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/22/99

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-030-01	Page 1 of 1

Collector Doug Bowers	Company Contact Doug Bryant Telephone No. 373-7251	Project Coordinator TRENT, SJ	Price Code IV Data Turnaround 45 Days
Project Designation 221-U Canyon Disposition Initiative - Electrical Galleries S	Sampling Location 221-U plant	SAF No. B99-030	
Ice Chest No. ERC 96-068	Field Logbook No. EFL 1133-6	Method of Shipment Fed Ex	
Shipped To TMA/~~RECRA~~ DJB 12-4-98	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive

Special Handling and/or Storage

Preservation	Cool 4C	None	None	None	None	None	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	60mL	60mL	60mL	60mL	1000mL		
SAMPLE ANALYSIS	PCBs - 8082	Activity Scan	Gross Alpha; Gross Beta	Isotopic Plutonium; Isotopic Uranium; Isotopic Thorium; Americium-241	Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311/7470	pH (Soil) - 9045	Strontium-89,90 -- Total Sr	See item (1) in Special Instructions		

Sample No.	Matrix *	Sample Date	Sample Time	PCBs - 8082	Activity Scan	Gross Alpha; Gross Beta	Isotopic	Metals	pH	Sr	Item (1)		
✓ B0TB06	Other Solid	12-4-98	1325		X	X	X			X	X		
✓ B0TB07	Other Solid	12-4-98	1320		X	X	X			X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	12-9-98 / 1000	Fed Ex	12-9-98
Fed Ex	12-10-98 12:30	JR Corso JR Corso	12-10-98 12:30

SPECIAL INSTRUCTIONS
** Close SDG upon receipt of samples.

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

in 1B @ 4C

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time